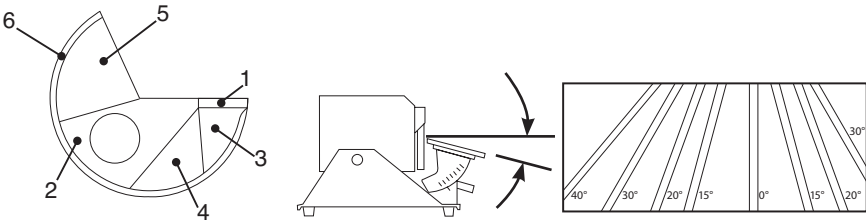


FOR STANDARD FACETED GUN DRILLS



Sharpening Sequence 1 ▶ 2 ▶ 3 ▶ 4 ▶ 5 ▶ 6	TABLE ANGLE	SLOT ANGLE FOR		Comments
		3/4 Round	1/2 Round	
<p>1. Primary Relief</p>	12° Down	30° Left	20° Left	Grind until wear is removed from cutting edge. Use fine wheel or ceramic lap for finishing. Grind "Y" slightly long because step 3 will shorten it.
<p>2. Inner Relief</p>	12° Down	20° Right	15° Right	Maintain D/4 (.25 times drill diameter) or as specified by drill supplier. Use caliper or calibrated magnifier to measure. Some applications may use other values such as D/3.
<p>3. Secondary Relief</p>	20° Down	30° Left	20° Left	Maintain "Y" of .01"-.03" (0,2-0,8mm) or as specified by drill manufacturer.
<p>4. Front Clearance</p>	25° Down	0° Center	0° Center	Grind until triangle just reaches the bottom of the primary relief ground in step 1.
<p>5. Oil Clearance</p>	IMPORTANT!		SKIP STEP 5	<i>Rotate drill holder on its side.</i> Grind until triangle just reaches the top cutting surface.
<p>6. Chamfer</p>	Rotate Wheel to horizontal position			Remove drill from holder. Hand rotate to chamfer the periphery at 10°-20° from the drill axis or as specified by drill supplier. The width of chamfer is normally about the same as the "Y" of Step 1. Chamfer should NOT enter the primary relief. Diamond files (#001-714) are also useful for chamfering.

Gun Drill Sharpening Tips

- Resharpen before the cutting edge breaks or chips. After the drill dulls, wear will rapidly accelerate. Pushing a dull drill by trying to make a few more parts can make resharpening much more difficult or even ruin the drill.
- The length and angle of the primary relief (D/4 dimension) can change the drilling characteristics. In some applications, D/3 works better than D/4. Consult the drill supplier's technical information on this subject.
- Wheel Recommendations:
 - Roughing: 360 "Gator" Diamond (# 001-234)
 - Finishing: 600 Diamond (# 001-235)
 - Polishing: Ceramic Lap charged with spray diamond. (LAP #001-671, spray diamond #002-754)

NOTE: Polishing the primary relief with the ceramic lap can extend drill life up to 300% and improve hole quality. For heavier roughing, try 180 "Gator" Diamond Wheel (#001-387).

- Primary Relief:

Follow drill supplier's specifications. If this is not available, grind "Y" in step 1 to:

 - .010" - .020" for drill diameters .100" - .200"
 - .020" - .030" for drill diameters .200" - .400"
 - .030" - .040" for drill diameters .400" - .700"
- Wheel Rotation:

Grind most surfaces with the wheel rotating from top to bottom of the drill (this automatically holds the drill down on the table). If chatter (vibration) occurs during sharpening, reverse the rotation. This requires holding the drill firmly on the table, but will stop the chatter. The cutting edge will NOT be hurt by this reversed wheel rotation due to the special low speed Accu-Finish grinding process.

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